

Cloud Retrieval Intercomparisons Between SEVIRI, MODIS and VIIRS with CHIMAERA PGE06 Data Collection 6 Products



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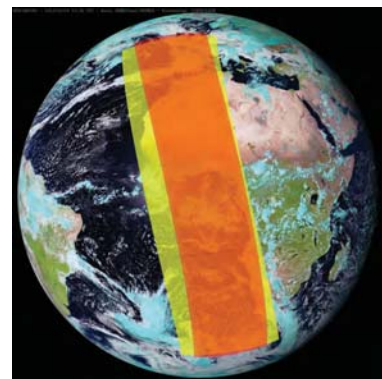
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Introduction

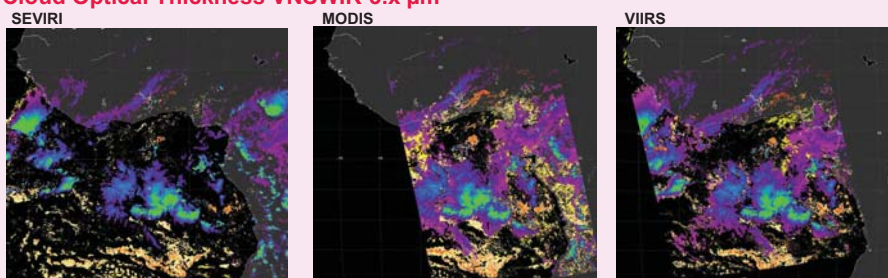
The Cross-platform High resolution Multi-instrument Atmospheric Retrieval Algorithms (CHIMAERA) system allows us to perform MODIS-like cloud top, optical and microphysical properties retrievals on any sensor that possesses a minimum set of common spectral channels. The CHIMAERA system uses a shared-core architecture that takes retrieval method out of the equation when intercomparisons are made. Here we show an example of such retrieval and a comparison of simultaneous retrievals done using SEVIRI, MODIS and VIIRS sensors.

All sensor retrievals are performed using CLAVR-x (or CLAVR-x based) cloud top properties algorithm. SEVIRI uses the SAF_NWC cloud mask. MODIS and VIIRS use the IFF-based cloud mask that is a shared algorithm between MODIS and VIIRS. The MODIS and VIIRS retrievals are performed using a VIIRS branch of CHIMAERA that limits available MODIS channel set. Even though in that mode certain MODIS products such as multilayer cloud map are not available, the cloud retrieval remains fully equivalent to operational Data Collection 6.

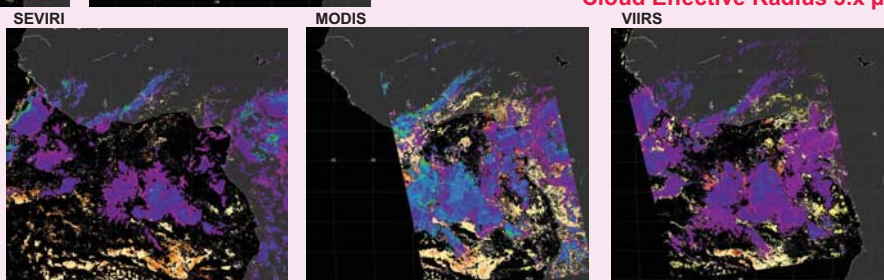
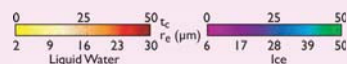


Sample Retrieval Results

Cloud Optical Thickness VNSWIR-3.x μm



Here we show an example CHIMAERA retrieval performed on SEVIRI, MODIS and VIIRS on 03.29.2013 (day 088) between 13:05 and 13:40 UTC using VNSWIR – 3.x μm channel combination.

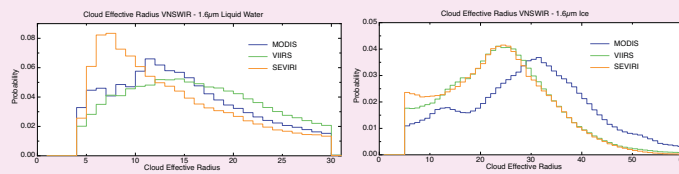
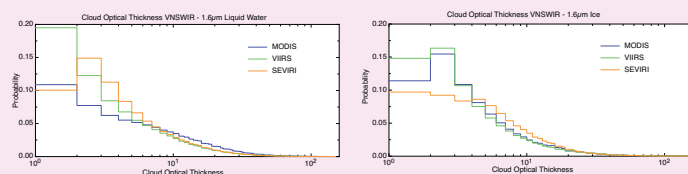


Cloud Effective Radius 3.x μm

Statistical Comparisons

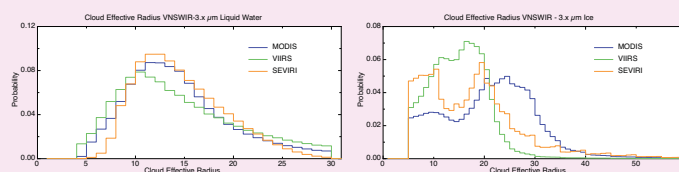
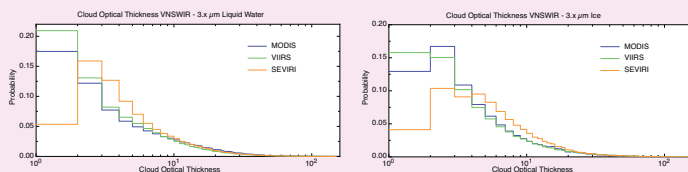
Cloud Optical Thickness VNSWIR-1.6 μm

Cloud Effective Radius 1.6 μm



Cloud Optical Thickness VNSWIR-3.x μm

Cloud Effective Radius 3.x μm



Conclusions

The CHIMAERA system allows for seamless intercomparisons between different sensors capable of performing cloud property retrievals using similar band combinations. The SEVIRI cloud product, fully equivalent to operational MODIS Data Collection 6 cloud optical and microphysical properties product is now produced operationally at ICARE and will soon be available to the general public. The CHIMAERA-based VIIRS cloud product fits well into the existing data record and will complement both SEVIRI and MODIS quite nicely.